WE CLAIM:

1.   A diagnostic system for diagnosing a malfunction during the operation of an instrument that gathers and analyzes real-time data comprising:

one or more information-gathering devices for gathering the real-time data;

a memory device in communication with the information-gathering devices for storing the real-time data; and

a data replay system in communication with the memory device for playing back the real-time data after the real time data was gathered.

2.   The diagnostic system of claim 1, wherein the one or more information-gathering devices includes a camera focused on an optical target in a wheel alignment system.

3.   The diagnostic system of claim 2 wherein the real-time data comprises a plurality of images gathered from the camera.

4.   The diagnostic system of claim 1, further comprising:

a data controller in communication with the information-gathering devices and the memory device that causes the memory device to store data from the information-gathering devices at pre-determined time intervals.

5.   The diagnostic system of claim 3, wherein the pre-determined time intervals vary in frequency over time.

6.   A diagnostic system for allowing a service technician to diagnose a malfunction during operation by an operator of a wheel alignment system that gathers information in real time about the alignment of a plurality of wheels comprising:

one or more cameras for gathering images of the alignment in real time, the images including reflections from a target mounted on each wheel;

a processing system in communication with the cameras for receiving the images and for generating analysis data based on the images, the analysis data providing an analysis of the alignment of the wheels;

a memory device for storing the images and the analysis data;

a storage control for causing the memory device to store the images and the analysis data in response to activation of the storage control by the operator during the occurrence of the malfunction;

a display device in communication with the memory device for selectively displaying the images and the analysis data; and

a play-back control for causing the display device to selectively display the images and the analysis data to the service technician in response to activation of the play-back control after the occurrence of the malfunction.

7. The diagnostic system of claim 6 wherein the storage control causes the storage of the images and the analysis data to be accomplished at pre-determined intervals.

8. The diagnostic system of claim 7 wherein the pre-determined intervals vary in frequency over time.

9. A method of diagnosing a malfunction during the operation of an instrument that gathers and analyzes real-time wheel alignment data comprising:

receiving real-time wheel alignment data from at least one information-gathering device;

storing the real-time wheel alignment data in a memory device;

re-playing the stored, real-time wheel alignment data; and

analyzing the re-played data to diagnose a malfunction.

10. The method of claim 9 wherein the at least one information gathering device includes a video camera.

11.   The method of claim 10 wherein the real-time wheel alignment data comprises images including reflections from a target mounted on each wheel.

12.   The method of claim 11, further comprising:

processing the real-time wheel alignment data to generate wheel alignment analysis data;

storing the wheel alignment analysis data;

re-playing the wheel alignment analysis data in conjunction with the re-playing of the real-time wheel alignment data; and

analyzing the re-played wheel alignment analysis data to diagnose a malfunction.

13.   The method of claim 9 further comprising transmitting the stored, real-time wheel alignment data across a communications network prior to re-playing it.

14.   The method of claim 9 wherein the storing of real-time wheel alignment data in a memory device is done at pre-determined intervals that vary in frequency over time.

15.   A means for diagnosing a malfunction during the operation of an instrument that gathers and analyzes real-time wheel alignment data comprising:

receiving means for receiving real-time wheel alignment data from at least one information-gathering means;

storage means for storing the real-time wheel alignment data;

playback means for re-playing the stored, real-time wheel alignment data; and

processor means for analyzing the re-played data to diagnose a malfunction.

16.   The diagnostic means of claim 9 wherein the at least one means for gathering information gathering includes an imaging means.

17. The diagnostic means of claim 10 wherein the real-time wheel alignment data comprises images including reflections from an optical target mounted on each wheel.

18. The diagnostic means of claim 11 wherein the processor means is a first processor means, the diagnostic means further comprising:

a second processor means for processing the real-time wheel alignment data to generate wheel alignment analysis data;

storage means for storing the wheel alignment analysis data;

the playback means further configured for re-playing the wheel alignment analysis data in conjunction with the re-playing of the real-time wheel alignment data; and

the first processor means further configured for analyzing the re-played wheel alignment analysis data to diagnose a malfunction.

19. The diagnostic means of claim 9 further comprising a transmitting means for transmitting the stored, real-time wheel alignment data across a communications network prior to re-playing it.

20. The diagnostic means of claim 9 wherein the storage means includes a controller means for causing the storing of wheel alignment data to be performed at pre-determined intervals that vary in frequency over time.